

**FACT SHEET FOR NPDES PERMIT WA0038709**  
**FORT COLUMBIA STATE PARK**

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System (NPDES) of permits, which is administered by the Environmental Protection Agency (EPA). The EPA has delegated responsibility to administer the NPDES permit program to the state of Washington on the basis of Chapter 90.48 Revised Code of Washington (RCW) which defines the Department of Ecology's (Ecology) authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the state include procedures for issuing permits [Chapter 173-220 Washington Administrative Code (WAC)], technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC), and water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least 30 days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see Appendix A--Public Involvement of the fact sheet for more detail on the Public Notice procedures).

This fact sheet has been reviewed by the Permittee and errors in fact have been corrected. After the public comment period has closed, Ecology will summarize the substantive comments and the response to each comment. The summary and response to comments (Appendix D) will become part of the file on the permit and parties submitting comments will receive a copy of Ecology's response. The fact sheet will not be revised. Changes to the permit will be addressed in Appendix D--Response to Comments.

GENERAL INFORMATION	
Applicant	Washington State Parks and Recreation Commission P.O. Box 42560 Olympia, WA 98504-2650
Facility Name and Address	Fort Columbia State Park P.O. Box 4288 Ilwaco, Washington 98624
Type of Treatment:	Municipal Secondary -- Fixed Film Reactor
Discharge Location	Columbia River Latitude: 46° 15' 01" N. Longitude: 123° 55' 16" W.
Water Body ID Number	WA-CR 1010

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## **BACKGROUND INFORMATION**

### *DESCRIPTION OF THE FACILITY*

#### History:

Fort Columbia is a former defense battery constructed in the late 1800s to protect the mouth of the Columbia River. Some time ago, the U.S. government decommissioned the fort and the state of Washington received ownership. The fort eventually became a state park.

The park is open to visitors during the months May through September. During those months in 1996, the park recorded an average of 12,647 visitors per month. However, park personnel use the facilities year-round, and two of the residences are occupied by park personnel throughout the year.

Ecology's files have little information regarding the construction of the wastewater treatment plants (WWTP). Ecology issued the first NPDES permit on March 18, 1976, and, based on the treatment technology, construction probably occurred sometime in the mid-1970s.

#### Collection System Status:

The date of initial collection system construction is unknown to Ecology, but occurred prior to construction of the WWTP. The collection system has experienced significant infiltration/inflow (I/I). State Parks has been television inspecting and rehabilitating known and suspected portions of the collection system during the past year. Recent monitoring results indicate success to reduce I/I.

#### Treatment Processes:

The WWTP consists of an underground, 5,250-gallon, settling tank. Because of long settling times, this tank functions more as a septic tank than a primary clarifier. After the underground settling tank wastewater flows by gravity to a rotating biological contractor (RBC) with 4,400 square-feet of surface media. A secondary clarifier receives the flow from the RBC. Settled sludge in the secondary clarifier is pumped to the underground settling tank. The clarifier effluent receives disinfection by chlorination and a chlorine contact tank. After flow measurement, the treated wastewater is discharged through a diffuser into the Columbia River.

According to a past fact sheet, the WWTP has a hydraulic capacity of 5,000 gallons per day. Ecology files do not contain design information, such as organic capacity, for the treatment plant.

Sludge is removed from the treatment system at the underground settling tank. State Parks periodically removes the sludge with a pumper truck and deposits the contents in the Fort Canby State Park WWTP.

Discharge Outfall:

The treated wastewater is discharged to the Columbia River through a diffuser located approximated 100 feet from the shore a mean low tide. State Parks constructed this outfall and 7 port diffuser in 1987. During mean low water, the diffuser is approximately 8 feet below the water surface.

*PERMIT STATUS*

The previous permit for this facility was issued on June 30, 1982. That permit placed effluent limitations on five-day Biochemical Oxygen Demand (BOD<sub>5</sub>), Total Suspended Solids (TSS), pH, and fecal coliform bacteria.

An application for permit renewal was submitted to Ecology on June 26, 1987. Ecology did not act on that application, and several years later, required State Parks to submit another application. State Parks submitted an application on November 21, 1996. This application was accepted by Ecology on November 22, 1996.

*SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT*

Ecology performed a permit compliance inspection according to the guidance in the EPA document, *NPDES Compliance Inspection Manual*, on October 18, 1996. Appendix D contains the permit compliance inspection report.

In past discharge monitoring reports (DMRs) the effluent appears to violate the federal secondary treatment standards for percent removal of BOD<sub>5</sub> and TSS. Part of this problem is attributed to the influent sampling location and part attributed to infiltration/inflow. The operator was obtaining the influent sample after the wastewater had received treatment in the underground settling tank. The operator will now obtain a representative influent sample. In addition, the operator failed to submit DMRs to Ecology for a six month period in 1993. Ecology's computerized data system will ensure that periods of non-reporting will not be unnoticed.

The DMRs also indicate past hydraulic overloading of the WWTP due to I/I. Recent collection system work appears, according to the DMRs, to have reduced I/I from entering the collection system. Flow measurement will identify the need for additional I/I reduction.

*WASTEWATER CHARACTERIZATION*

The concentration of pollutants in the discharge was reported in the NPDES application and in discharge monitoring reports. The effluent is characterized as follows:

**Table 1: Wastewater Characterization**

Parameter	Concentration
BOD <sub>5</sub>	17 mg/l
TSS	17 mg/l
Total Residual Chlorine	1.5 mg/l

**PROPOSED PERMIT LIMITATIONS AND CONDITIONS**

Federal and state regulations require that effluent limitations set forth in a NPDES permit must be either technology- or water quality-based. Technology-based limitations for municipal discharges are set by regulation (40 CFR 133, and Chapters 173-220 and 173-221 WAC). Water quality-based limitations are

based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC) or Sediment Quality Standards (Chapter 173-204 WAC). The most stringent of these types of limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

### DESIGN CRITERIA

In accordance with WAC 173-220-130(1)(a), effluent limitations shall not be less stringent than those based upon the design criteria for the facility, which are contained in approved engineering plans, reports, or approved revisions. Also, in accordance with WAC 173-220-150 (1)(g), flows or waste loadings shall not exceed approved design criteria. Ecology's files do not contain an approved engineering report or plans and specifications for the Fort Columbia WWTP. The previous fact sheet had the following design criteria:

**Table 2: Design Standard for the Fort Columbia State Park WWTP**

Parameter	Design Quantity
Monthly average flow (max. month)	0.005 MGD

### TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Municipal wastewater treatment plants are a category of discharger for which technology-based effluent limits have been promulgated by federal and state regulations. These effluent limitations are given in the 40 CFR Part 133 (federal) for BOD<sub>5</sub>, TSS, and pH, and in Chapter 173-221 WAC (state) for the same parameters with the addition of fecal coliform bacteria. These regulations are performance standards that constitute all known available and reasonable methods of prevention, control, and treatment for municipal wastewater.

The technology-based limits for pH, fecal coliform bacteria, BOD<sub>5</sub>, and TSS follow:

**Table 3: Technology-based Limits.**

Parameter	Limit
pH:	shall be within the range of 6 to 9 standard units.
Fecal Coliform Bacteria	Monthly Geometric Mean shall not exceed 200 colonies/100 mL Weekly Geometric Mean shall not exceed 400 colonies/100 mL
BOD <sub>5</sub> (concentration)	Average Monthly Limit shall not exceed 30 mg/L or fifteen percent (15%) of the average influent concentration Average Weekly Limit shall not exceed 45 mg/L
TSS (concentration)	Average Monthly Limit shall not exceed 30 mg/L or fifteen percent (15%) of the average influent concentration Average Weekly Limit shall not exceed 45 mg/L

Monthly effluent mass loadings (lbs/day) were calculated as the maximum monthly design flow (0.005 MGD) x Concentration limit (30 mg/L) x 8.34 (conversion factor) = mass limit (1.25 pounds per day).

The weekly average effluent mass loading is calculated as 1.5 x monthly loading = 1.88 lbs/day.

### *SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS*

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin-wide total maximum daily loading study (TMDL).

#### Numerical Criteria for the Protection of Aquatic Life:

"Numerical" water quality criteria are numerical values set forth in the state of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in a receiving water while remaining protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

#### Numerical Criteria for the Protection of Human Health:

The state was issued 91 numeric water quality criteria for the protection of human health by the U.S. EPA (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

#### Narrative Criteria:

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the state of Washington.

#### Antidegradation:

The state of Washington's Antidegradation Policy requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of a receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when the natural conditions of a receiving water are of higher quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. More information on the state Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

Ecology has reviewed existing records and is unable to determine if ambient water quality is either higher or lower than the designated classification criteria given in Chapter 173-201A WAC; therefore, Ecology will use the designated classification criteria for this water body in the proposed permit. The discharges authorized by this proposed permit should not cause a degradation of existing water quality or beneficial uses.

#### Critical Conditions:

Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses.

Mixing Zones:

The Water Quality Standards allow Ecology to authorize mixing zones around a point of discharge in establishing surface water quality-based effluent limits. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone. Mixing zones can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention and control (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-100.

The National Toxics Rule (EPA, 1992) allows the chronic mixing zone to be used to meet human health criteria.

Description of the Receiving Water:

The facility discharges to the Columbia River which is designated as a Class A receiving water in the vicinity of the outfall. Other nearby point source outfalls include the Town of Ilwaco's wastewater treatment plant and Jessie's Ilwaco Fish Company. Characteristic uses include the following:

water supply (domestic, industrial, agricultural); stock watering; fish migration; fish rearing, spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce; and navigation.

Water quality of this class shall meet or exceed the requirements for all or substantially all uses.

Surface Water Quality Criteria:

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Ecology's *Permit Writer's Manual* requires, when the volume weighted salinity is between 1 and 10 parts per thousand, application of the most protective criteria of either fresh or marine water. Criteria for this discharge are summarized in the following table:

**Table 4: Water Quality Criteria**

Parameter	Freshwater Criterion	Marine Water Criterion	Applicable Criterion
Fecal Coliform Bacteria	100 colonies/100 mL maximum geometric mean	14 Colonies/100 mL maximum geometric mean	14 Colonies/100 mL maximum geometric mean
Dissolved Oxygen	8 mg/L minimum	6 mg/L minimum	8 mg/L minimum
Temperature	18°C maximum	16°C maximum	16°C maximum

Parameter	Freshwater Criterion	Marine Water Criterion	Applicable Criterion
pH	6.5 to 8.5 standard units	7 to 8.5 standard units	7 to 8.5 standard units
Turbidity	less than 5 NTU above background	less than 5 NTU above background	less than 5 NTU above background
Toxics	No toxics in toxic amounts (see Appendix C for numeric criteria for toxics of concern for this discharge)	No toxics in toxic amounts (see Appendix C for numeric criteria for toxics of concern for this discharge)	No toxics in toxic amounts (see Appendix C for numeric criteria for toxics of concern for this discharge)

Consideration of Surface Water Quality-Based Limits for Numeric Criteria:

Pollutant concentrations in the proposed discharge exceed water quality criteria with technology-based controls which Ecology has determined to be AKART. A mixing zone is authorized in accordance with the geometric configuration, flow restriction, and other restrictions for mixing zones in Chapter 173-201A WAC and are defined as follows:

*Chronic Mixing Zone* -- The boundary of the chronic mixing zone extends in any horizontal direction from the diffuser ports for a distance of 208 feet.

*Acute Mixing Zone* -- The boundary of the acute mixing zone extends in any horizontal direction from the diffuser ports for a distance of 21 feet.

The critical condition for the Columbia River occurs during August or September. Ambient data at critical conditions in the vicinity of the outfall was taken from a report to evaluate locations for the Town of Ilwaco's outfall. This report, titled *Screening Level Evaluation for a Regional Wastewater Outfall in Pacific County, Washington*, contains the ambient monitoring data used by the permit writer to calculate the dilution factors.

The dilution factors of effluent to receiving water that occur within these zones have been determined at the critical condition by the use of the UM computer modeling program. The dilution factors have been determined to be (from Appendix C):

	Acute	Chronic
Aquatic Life	250	446

These dilution factors are atypical for a municipal wastewater. The permit writer also modeled the dilution of the wastewater in the Columbia River using the computer modeling programs CORMIX2, UDHKDEN, and RSB. These models calculated similar dilution factors.

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants. The adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as BOD is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of



calculating water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

The derivation of water quality-based limits also takes into account the variability of the pollutant concentrations in both the effluent and the receiving water.

The impacts of dissolved oxygen deficiency, temperature, pH, fecal coliform bacteria and chlorine were determined using the dilution factors calculated during the critical condition.

BOD -- Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters. Therefore, the technology-based effluent limitation for BOD was placed in the permit.

The impact of BOD on the receiving water was modeled using the Streeter-Phelps analysis at critical condition and with the technology-based effluent limitation for BOD described under "Technology-Based Effluent Limitations" above. The calculations used to determine dissolved oxygen impacts are shown in Appendix C.

Temperature -- The impact of the discharge on the temperature of the receiving water was modeled by simple mixing analysis at critical condition. The receiving water temperature at the critical condition is 13.6°C and the effluent temperature is 18°C. The predicted resultant temperature at the boundary of the chronic mixing zone 13.6°C.

Under critical conditions, there is no predicted violation of the Water Quality Standards for Surface Waters. Therefore, no effluent limitation for temperature was placed in the proposed permit.

pH -- Because of the high buffering capacity of marine water, compliance with the technology-based limits of 6 to 9 will assure compliance with the Water Quality Standards for Surface Waters.

Fecal coliform bacteria -- The numbers of fecal coliform were modeled by simple mixing analysis using the technology-based limit of 400 colonies per 100 ml and a dilution factor of 466.

Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters with the technology-based limit. Therefore, the technology-based effluent limitation for fecal coliform bacteria was placed in the proposed permit.

Toxic Pollutants -- Federal regulations (40 CFR 122.44) require NPDES permits to contain effluent limits for toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. This process occurs concurrently with the derivation of technology-based effluent limits. Facilities with technology-based effluent limits defined in regulation are not exempted from meeting the Water Quality Standards for Surface Waters or from having surface water quality-based effluent limits.

The following toxics were determined to be present in the discharge: chlorine and, probably, ammonia. The permit writer performed a reasonable potential analysis (see Appendix C) on chlorine to determine if the permit should specify chlorine limitations.

The determination of the reasonable potential for chlorine to exceed the water quality criteria was evaluated with procedures given in EPA, 1991 (Appendix C) at the critical condition. The critical condition in this case occurs during late August/early September. The parameters used in the

critical condition modeling are as follows: acute dilution factor 250, chronic dilution factor 466, and receiving water temperature 13.6°C.

Valid ambient background data were available. Calculations using all applicable data resulted in a determination that there is no reasonable potential for this discharge to cause a violation of water quality standards for chlorine.

The permit writer used experience to decide that it is not necessary to evaluate the reasonable potential for ammonia to violate water quality standards because of the high dilution factors. Analysis of several municipal dischargers indicate unlikely exceedences of ammonia water quality standards when the acute dilution factor is greater than 20.

#### Whole Effluent Toxicity:

The Water Quality Standards for Surface Waters require that the effluent does not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available detection methods. However, toxicity can be measured directly by exposing living organisms to the wastewater in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent, and therefore this approach is called whole effluent toxicity (WET) testing.

Toxicity caused by unidentified pollutants is not expected in the effluent from this discharge as determined by the screening criteria given in Chapter 173-205 WAC. Therefore, no WET testing is required in this permit. Ecology may require effluent toxicity testing in the future if it receives information that toxicity may be present in this effluent.

#### Human Health:

Ecology has determined that the applicant's discharge is unlikely to contain chemicals regulated for human health. The discharge will be re-evaluated for impacts to human health at the next permit reissuance.

#### Sediment Quality:

Ecology has promulgated aquatic sediment standards (Chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that Ecology may require Permittees to evaluate the potential for the discharge to cause a violation of applicable standards (WAC 173-204-400).

Ecology has determined through a review of the discharger characteristics and effluent characteristics that this discharge has no reasonable potential to violate the Sediment Management Standards.

#### *GROUNDWATER QUALITY LIMITATIONS*

Ecology has promulgated Ground Water Quality Standards (Chapter 173-200 WAC) to protect uses of groundwater. Permits issued by Ecology shall be conditioned in such a manner so as not to allow violations of those standards (WAC 173-200-100).

This WWTP has no discharge to ground. Limitations based on potential effects to groundwater are not required.

## MONITORING AND REPORTING

Effluent monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved.

Monitoring of sludge quantity and quality is necessary to determine the appropriate uses of the sludge. Sludge monitoring is required by the current state and local solid waste management program and also by EPA under 40 CFR 503. Since the sludge is removed from the Fort Columbia State Park WWTP and transported to another WWTP for additional treatment the draft permit does not require sludge testing other than monitoring the sludge depth in the underground settling tank and recording the volume of sludge removed.

The monitoring and testing schedule is detailed in the proposed permit under Condition S.2. Specified monitoring frequencies take into account the quantity and variability of discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. The required monitoring frequency is consistent with agency guidance given in the current version of Ecology's *Permit Writer's Manual* for a wastewater treatment plant with a capacity less than 100,000 gallons per day.

In the permit application, State Parks requested Ecology to reduce BOD<sub>5</sub> and TSS testing during the off-season to one time per month. Their request has merit and reflects the frequency of the previous permit. However, because of past I/I, the previous influent sampling location and long non-sampling events, Ecology does not have data to evaluate treatment plant operation during the winter months. To obtain this information, the draft permit has specified BOD<sub>5</sub> and TSS testing at a frequency of two times per month when the park is closed to the public. A season of testing should provide data to evaluate the operation of the WWTP and permit compliance during the periods of reduced loading. After the off-season of testing, Ecology will reconsider State Parks' request for once per month testing of BOD<sub>5</sub> and TSS when the park is closed to the public.

## PREVENTION OF FACILITY OVERLOADING

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-220-150 require State Parks to take the actions detailed in proposed permit requirement S.4. This is to plan expansions or modifications before existing capacity is reached and to report and correct conditions that could result in new or increased discharges of pollutants. Condition S.4. restricts the amount of flow.

## OPERATION AND MAINTENANCE (O&M)

The proposed permit contains Condition S.5 as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

## RESIDUAL SOLIDS HANDLING

To prevent water quality problems, State Parks is required in permit Condition S7 to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and state Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503. The disposal of other solid waste is under the jurisdiction of the Pacific County Health Department.

Requirements for monitoring sewage sludge and recordkeeping are included in this permit.

*GENERAL CONDITIONS*

General Conditions are based directly on state and federal law and regulations and have been standardized for all individual NPDES permits issued by Ecology.

**PERMIT ISSUANCE PROCEDURES**

*PERMIT MODIFICATIONS*

Ecology may modify this permit to impose numerical limitations, if necessary, to meet Water Quality Standards, Sediment Quality Standards, or Ground Water Standards, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

Ecology may also modify this permit as a result of new or amended state or federal regulations.

*RECOMMENDATION FOR PERMIT ISSUANCE*

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to protect human health, aquatic life, and the beneficial uses of waters of the state of Washington. Ecology proposes that this permit be issued for five years.

*REVIEW BY THE PERMITTEE*

A proposed permit was reviewed by the Permittee for verification of facts. Only factual items were corrected in the draft permit and fact sheet.

*REFERENCES FOR TEXT AND APPENDICES*

Environmental Protection Agency (EPA)

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.
1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.
1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington, D.C.
1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.
1983. Water Quality Standards Handbook. USEPA Office of Water, Washington, D.C.
- Metcalf and Eddy.
1991. Wastewater Engineering, Treatment, Disposal, and Reuse. Third Edition.
- Tsivoglou, E.C., and J.R. Wallace.
1972. Characterization of Stream Reaeration Capacity. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)
- Water Pollution Control Federation.
1976. Chlorination of Wastewater.
- Wright, R.M., and A.J. McDonnell.
1979. In-stream Deoxygenation Rate Prediction. Journal Environmental Engineering Division, ASCE. 105(EE2). (Cited in EPA 1985 op.cit.)

## **APPENDICES**

### *APPENDIX A--PUBLIC INVOLVEMENT INFORMATION*

Ecology has tentatively determined to reissue a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Ecology will publish a Public Notice of Draft (PNOD) in *The Chinook Observer* to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator  
Department of Ecology  
Southwest Regional Office  
P.O. Box 47775  
Olympia, WA 98504-7775.

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the 30-day comment period to the address above. The request for a hearing shall indicate the interest of the party and the reasons why the hearing is warranted. Ecology will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least 30 days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

Ecology will consider all comments received within 30 days from the date of the PNOD indicated above, in formulating a final determination to issue, revise, or deny the permit. Ecology's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from Ecology by telephone, (360) 407-6279, or by writing to the address listed above.

## APPENDIX B--GLOSSARY

**Acute Toxicity**--The lethal effect of a compound on an organism that occurs in a short period of time, usually 48 to 96 hours.

**Ambient Water Quality**--The existing environmental condition of the water in a receiving water body.

**Ammonia**--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

**Best Management Practices (BMPs)**--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

**BOD<sub>5</sub>**--Five day biochemical oxygen demand is the quantity of oxygen utilized by a mixed population of microorganisms in an aerobic oxidation for 5 days at a controlled temperature of 20°C. BOD is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

**Bypass**--The intentional diversion of waste streams from any portion of a treatment facility.

**Chlorine**--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

**Chronic Toxicity**--The effect of a compound on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

**Class 1 Inspection**--A walk-through inspection of a facility that includes a visual inspection and some examination of facility records. It may also include a review of the facility's record of environmental compliance.

**Class 2 Inspection**--A walk-through inspection of a facility that includes the elements of a Class 1 Inspection plus sampling and testing of wastewaters. It may also include a review of the facility's record of environmental compliance.

**Clean Water Act (CWA)**--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

**Combined Sewer Overflow (CSO)**--The event during which excess combined sewage flow caused by inflow is discharged from a combined sewer, rather than conveyed to the sewage treatment plant because either the capacity of the treatment plant or the combined sewer is exceeded.

**Composite Sample**--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite" (collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots).

**Construction Activity**--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

**Critical Condition**--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

**Daily Maximum Discharge Limitation**--The greatest allowable value for any calendar day.

**Dilution Factor**--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the effluent fraction.

**Engineering Report**--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

**Fecal Coliform Bacteria**--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

**Grab Sample**--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

**Industrial Wastewater**--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

**Infiltration and Inflow (I/I)**--"Infiltration" means the addition of ground water into a sewer through joints, the sewer pipe material, cracks, and other defects. "Inflow" means the addition of rainfall-caused surface water drainage from roof drains, yard drains, basement drains, street catch basins, etc., into a sewer.

**Mixing Zone**--A volume of receiving water that surrounds an effluent discharge within which water quality criteria may be exceeded. The dimensions of the authorized mixing zone are specified in a facility's permit and follows procedures outlined in state regulations (chapter 173-201A WAC).

**Monthly Average** --The average of the measured values obtained over a calendar month's time.

**National Pollutant Discharge Elimination System (NPDES)**--The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the State of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both State and Federal laws.

**pH**--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

**State Waters**--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

**Stormwater**--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

**Technology-based Effluent Limit**--A permit limit that is based on the ability of a treatment method to reduce the pollutant.



**Total Suspended Solids (TSS)**--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

**Upset**--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

**Water Quality-based Effluent Limit**--A limit on the concentration of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

*APPENDIX C--DILUTION MODELING AND REASONABLE POTENTIAL ANALYSIS*

*APPENDIX D--PERMIT COMPLIANCE INSPECTION REPORT*

APPENDIX E--RESPONSE TO COMMENTS

**RESPONSE TO COMMENTS  
DRAFT NPDES PERMIT**

Permit Type: National Pollutant Discharge Elimination System (NPDES)

Permit Number: WA0038709

Permittee: Washington State Parks and Recreation Commission  
P.O. Box 42560  
Olympia, WA 98504-2650

Permitting Authority: Washington State Department of Ecology  
Southwest Regional Office  
P.O. Box 47775  
Olympia, WA 98504-7775

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In accordance with 40 CFR 122.62 and 124, Ecology publicly noticed a tentative decision to issue a new NPDES permit for the Fort Columbia State Park wastewater treatment plant. On March 25, 1997 *The Chinook Observer* newspaper publicly noticed Ecology's decision to issue the NPDES permit. The notice required public submittal of written comments within 30 days of the date of public notification. Ecology received written comments from the Washington State Department of Natural Resources.

Ecology has paraphrased the Department of Natural Resource's comments. The comments and Ecology's response follows:

Comment.

The Department of Natural Resources has been delegated management control of state owned aquatic lands. The outfall from the wastewater treatment plant is located on state owned aquatic land. DNR is in the process of issuing a use authorization to the Washington State Parks and Recreation Commission for the outfall.

To ensure the protection of state owned aquatic land in the vicinity of discharges, DNR recommends discharge permits to incorporate Ecology's Sediment Management Standards (SMS, Chapter 173-204 WAC). Ecology should assess the status of source control, conduct a screening level evaluation, and if necessary perform a detailed evaluation to determine the need for establishing a Sediment Impact Zone (SIZ). The information DNR received indicates that all applicable assessments have been completed for the Fort Columbia State Park outfall. The results show no reasonable potential for sediment impacts in violation of SMS.

Although Ecology's evaluations suggest limited potential for violation of SMS, DNR encourages Ecology to reevaluate this potential impact during each renewal of the NPDES permit. Include consideration of sediment sampling as a permit requirement. DNR also encourages continued discussion of upland alternatives for the site.

Response:

Ecology used the narrative evaluation sheet in Chapter IX of the *Permit Writer's Manual* to consider the affect of the discharge on the quality of aquatic sediment. This screening level evaluation indicates the discharge is unlikely to adversely impact sediments in the Columbia River.

The *Permit Writer's Manual* states:

If neither the narrative nor the technical evaluations indicate that a discharge has the potential to cause sediment impacts, the permit should be issued or renewed by the permit manager without a SIZ authorization or sediment quality-based effluent limits. No sediment monitoring should be required in the permit. The permit manager should identify the lack of potential for sediment impacts in the fact sheet accompanying the permit.

If future monitoring indicates a potential impact to the sediment in the Columbia River the permit can be modified to include testing of the effluent or receiving water sediment. The discharge's impact to the aquatic sediment will be evaluated again during the next permit reissuance.